

REMARKS

Summary of Amendments

Claims 1, 15 and 16 have been amended to incorporate further features of a wafer holder according to the present invention, and to make clear that, taken together, the recited features achieve a temperature uniformity of $\pm 0.5\%$ in the claimed wafer holder.

Claim 2 has been canceled, as it should have been earlier, in Applicant's October 31, 2006 amendment accompanying the first RCE filed in this case, because by that amendment, claim 2 was rendered redundant over claim 1.

In addition to claim 2, claims 4, 6 and 11 have been newly canceled, as necessitated by the present amendments to claims 1, 15 and 16; claims 5, 7 and 12 were canceled in previous amendments.

Claims 1, 3, 8-10, and 13-16 thus are pending before the Examiner.

Claim Rejections – 35 U.S.C. § 103

Claims 1-4, 6, 8-10, 13 and 14: Kuibira et al. '911 in view of Kadomura et al. '273, or Shamouilian et al. '928, and Kanno et al. '439 or Takuma et al. (JP) '465

Claims 1-4, 6, 8-10, 13 and 14 stand rejected as being unpatentable over U.S. Pat. App. Pub. No. 2002/0007911 to Kuibira et al. in view of U.S. Pat. No. 5,968,273 to Kadomura et al., or U.S. Pat. No. 6,462,928 to Shamouilian et al., and U.S. Pat. App. Pub. No. 2003/0168439 to Kanno et al. or Japanese Unexamined Pat. App. Pub. No. H09-249465 to Takuma et al.

The rejections in the present Office action are for the most part a repetition of those in the previous action, dated August 22, 2007; furthermore, under Response to Arguments, Applicant's counterarguments made in Applicant's previous, October 31, 2007 reply are rebutted. The new material is noted and addressed below.

The Examiner newly alleges, on page 2 of the Office-action letter—in the second paragraph of the main text of the rejection—that *Kadomura et al.* discloses "a metal plate 8b made of molybdenum, attached along with the metal support plate." More accurately put, *Kadomura et al.* discloses metal plates 8a and 8b sandwiching a heater 7 and enclosed in an aluminum nitride case 6 to compose an electrostatic chuck 3 fixedly attached to a temperature adjusting jacket 2. This more accurate analysis of what is actually disclosed in *Kadomura et al.* evinces that *Kadomura et al.* does not teach a heat-reflecting metal plate fastened directly to a susceptor.

On page 3, the Examiner then cites *Shamouilian et al.* to allege that it is known in the art to provide a heating-element-incorporating ceramic susceptor with a copper-molybdenum metal "bonding layer/plate (295)." The relevant drawing is Fig. 6 in *Shamouilian et al.* In the passage cited by the Examiner, *Shamouilian et al.* states that the bonding layer 295 is of about 50 to 500 μm thickness. Thus it cannot be said that the bonding layer 295 anticipates a metal plate according to the present invention as recited in claims 9, 15 and 16, which each require that the metal-plate thickness is greater than that of the susceptor.

The Examiner concludes the new grounds of rejection by stating that *Kuibira et al.* in light of *Kadomura et al.* or *Shamouilian et al.* would render the claimed invention obvious.

Finally, it is noted that the Examiner rebuts Applicant's October 31, 2007 counterarguments by stating, on page 4, second and third lines from the bottom, of the Office-action letter, "*Kadomura* having the same material as that of the claimed metal plate would also diffuse heat as is done with the claimed invention," and on page 5, in the fourth and fifth lines, "Furthermore, *Kadomura*, having the structure same or similar to that of the claimed structure, is capable of performing the same function as that of the recited function."

Applicants traverse these assertions in the first place by pointing out that the independent claims have been commonly amended to add new limitations not present in the claims hitherto. Claim 1 now recites,

A holder . . . comprising:
a ceramic susceptor of an aluminum nitride ceramic of porosity of 0.03% or less whose thermal conductivity is 100 W/mK or more, said susceptor having a retaining side for retaining an object to be processed, said retaining side having a warpage of 500 μm or less and a surface roughness of under 5 μm Ra;
a resistive heating element incorporated in said susceptor, said resistive heating element patterned in a circuit having a thickness of 5 to 100 μm and a pattern spacing of 0.1 mm or more; and
a metal plate having a thermal conductivity higher than that of said ceramic susceptor, said metal plate mechanically attached to said susceptor opposite said retaining side by an adhesive bonding layer, by screws screwed into said susceptor, or by a recess provided in said metal plate, into which said susceptor is snug-fit, whereby the higher thermal conductivity of said metal plate than, together with said metal plate's mechanical attachment to, said susceptor promote diffusion of heat from said resistive heating element toward said retaining side,
whereby the temperature uniformity of the holder in operation is within $\pm 0.5\%$.

In the second place, it is respectfully submitted that the Examiner has not shown how the felt need for a temperature uniformity of $\pm 0.5\%$ in the present art would predict

combining the references that the examiner cites. In the absence of such a showing, the combining of the particular references cited can only seem to be predicated on hindsight reasoning.

Taken together, the wafer-holder features as combined according to the present invention and as recited minimally in claim 1 unpredictably achieve a temperature uniformity of $\pm 0.5\%$. Accordingly, it is courteously urged that claim 1 is patentable over the prior art of record and that the rejection of this claim is overcome. Inasmuch as amended claims 15 and 16 include all the features of, but are successively narrower in scope than, claim 1, it follows that the rejection of claims 15 and 16 is overcome, as is the rejection of claims 3, 8-10, 13 and 14, which each depend directly from claim 1.

Claims 11, 15 and 16: Kuibira et al. '911 in view of Kadomura et al. '273, or Shamouilian et al. '928, and Kanno et al. '439 or Takuma et al. (JP) '465, and further in view of Hiramatsu et al. '006

Claims 11, 15 and 16 were rejected as being unpatentable over *Kuibira et al.* in view of *Kadomura et al.* or *Shamouilian et al.*, and *Kanno et al.* or *Takuma et al.*, as applied in making the rejection addressed above, and further in view of U.S. Pat. No. 6,507,006 to Hiramatsu et al.

Claim 11 has been canceled. For the reasons set forth above, it is believed that independent claim 1 should be held allowable, and as also reasoned above, since claims 15 and 16 are successively narrower versions of claim 1, these claims should in turn be held allowable.

Conclusion

Accordingly, Applicant courteously urges that this application is in condition for allowance. Reconsideration and withdrawal of the rejections is requested. Favorable action by the Examiner at an early date is solicited.

Respectfully submitted,

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